

ACCESSION #: 9612090229
LICENSEE EVENT REPORT (LER)

FACILITY NAME: North Anna Power Station Unit 2 PAGE: 1 OF 4

DOCKET NUMBER: 05000339

TITLE: AUTOMATIC REACTOR TRIP RESULTING FROM MAIN GENERATOR
STATOR COIL FAILURE DUE TO PERSONNEL ERROR

EVENT DATE: 11/12/96 LER #: 96-003-00 REPORT DATE: 12/03/96

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 100

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR
SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: Mr. W. R. Matthews TELEPHONE: (540) 894-2101

COMPONENT FAILURE DESCRIPTION:

CAUSE: A SYSTEM: TB COMPONENT: TG MANUFACTURER: W120
REPORTABLE NPRDS: Y

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On November 12, 1996, at 0853 hours, Unit 2 experienced an automatic reactor trip from 100 percent power. The reactor trip initiating signal was a Turbine Trip/Reactor Trip resulting from a main generator trip. The main generator trip was the result of actuation of the generator stator ground overvoltage relay (59N) which picked up the generator differential lockout relay (86G). Emergency procedures were entered and immediate actions were performed. All engineered safety feature (ESF) equipment responded as designed. A non-emergency four hour report was made to the NRC at 1112 hours pursuant to 10CFR50.72(b)(2)(ii). This event is reportable pursuant to 10CFR50.73(a)(2)(iv).

The cause of the reactor trip has been determined to be a failed generator stator coil due to overheating.

No significant safety implications resulted from the reactor trip because the reactor protection and engineered safety systems responded as designed. Therefore, the health

and safety of the public were not affected at any time during this event.

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At 0853 hours, Unit 2 experienced an automatic reactor trip from 100 percent power. The reactor trip initiating signal was a Turbine Trip/Reactor Trip resulting from a main generator trip. The main generator trip was the result of actuation of the generator stator ground overvoltage relay (59N) which picked up the generator differential lockout relay (86G). An ESF actuation subsequently followed, as designed, with the starting of the auxiliary feedwater pumps.

At the time of the trip, there were no indications of generator or electrical system disturbances which would cause the 59N (EHS System-TB, Component-59) relay to actuate. No major maintenance or testing activities were in progress. Primary system parameters were normal for full power operation.

A fault was later found on the "A" phase of the main generator stator. Initial inspection of the main generator (EHS System-TB, Component-TG) discovered a piece of plastic at a location that blocked coolant tubes within four windings of the generator. This blockage caused overheating in the stator windings resulting in failure of the insulation of the affected parts.

2.0 Significant Safety Consequences and Implications

This event posed no significant safety implications because the reactor protection and engineered safety systems responded as designed following the reactor trip. The health and safety of the public were not affected at any time during this event.

A non-emergency four hour report was made to the NRC at 11 12 hours pursuant to 10 CFR 50.72 (b)(2)(ii). This event is reportable pursuant to 10CFR50.73(a)(2)(iv) for a condition that resulted in an automatic actuation of any ESF, including the reactor protection system.

3.0 Cause of the Event

The turbine and reactor trip was a result of a main generator trip. The main generator trip was the result of actuation of the generator stator ground overvoltage relay (59N) which picked up the generator differential lockout relay (EHS System-TB, Component-86G). Operation of the 59N relay was caused by a fault on the "A" phase of the main generator stator. Failure of the stator coil was a result of overheating due to blockage of four windings within the generator.

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4.0 Immediate Corrective Actions

Following the reactor trip emergency procedure E-0, Reactor trip or Safety Injection, was entered and immediate actions performed. The post trip response progressed as expected and within approximately four minutes the operators transitioned to 2-ES-0.1, Reactor Trip Response. All engineered safety feature (ESF) equipment responded as designed. Initially, reactor coolant system (RCS) pressure and temperature decreased to approximately 1950 psig and 546 degrees F, respectively. Pressurizer level decreased to 23 percent. Subsequently, RCS pressure/temperature and pressurizer level returned to their normal values. Emergency boration was initiated due to a control rod indicating 15 steps. The problem was determined to be limited to indication only, the control rod was verified to be fully inserted. The unit was brought to a stable condition.

5.0 Additional Corrective Actions

The main generator is being disassembled for inspections / tests and necessary repairs. A root cause evaluation is being performed to investigate the reactor trip and the source of the plastic.

6.0 Actions to Prevent Recurrence

Following completion of the root cause evaluation, corrective actions will be implemented as required.

7.0 Similar Events

Units 1 & 2 experienced three turbine / reactor trips as a result of main generator trips and were reported in the following LERs:

N1-96-010-00 The main generator trip was caused by the actuation of a generator negative phase sequence relay.

N2-86-008-00 The main generator trip was caused by the actuation of a generator differential lockout relay upon loss of excitation field signal.

N2-93-002-00 The main generator trip was caused by overexcitation.

8.0 Additional Information

Component malfunctions resulting from the reactor trip include: "B" Moisture Separator Reheater reheat valve (2-MS-FCV-204B) failed to close automatically, "C" Reserve

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Station Service breaker (25C1) indicating light was not lit, Intermediate Range NI-35 was over compensated, charging flow control valve (2-CH-FCV-2122) was placed in manual due to erratic operation, secondary relief valves lifted, IRPI Rod D4 on Control Bank "C" indicated 15 steps, eccentricity and turbine high vibration alarms annunciated during turbine coast down, GETARS did not actuate automatically, and the "B" steam dump local valve position indicator failed. Work orders were initiated, as appropriate, to repair all equipment malfunctions.

Hot control rod drop testing was performed on all 48 control rods. All rods were verified to function properly.

Unit 1 was operating in Mode 1, 100 percent power, and was not affected by the event.

Component: Main Turbine Generator
Model No.: 80P805
Manufacturer: Westinghouse

10 CFR 50.73

Virginia Electric and Power Company
North Anna Power Station
P. O. Box 402
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December 3, 1996

U. S. Nuclear Regulatory Commission NAPS: MPW
Document Control Desk Docket Nos. 50-339
Washington, D.C. 20555 License Nos. NPF-7

Dear Sirs:

Pursuant to North Anna Power Station Technical Specifications, Virginia Electric and Power Company hereby submits the following Licensee Event Report applicable to North Anna Unit 2.

R Report No. 50-339/96-003-00

This Report has been reviewed by the Station Nuclear Safety and Operating Committee and will be forwarded to the Management Safety Review Committee for its review.

Very truly yours,

W. R. Matthews
Station Manager

Enclosure:

cc: U.S. Nuclear Regulatory Commission
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Suite 2900
Atlanta, Georgia 30323

R. D. McWhorter
NRC Senior Resident Inspector
North Anna Power Station

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